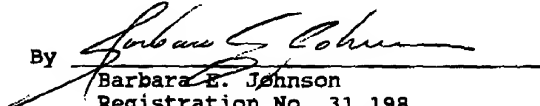


acid sequence of this reference does not disclose a T cell epitope. The ATVLA sequenc shows homology to a region which includes a T cell epit pe. However, the 5-mer sequence disclosed in the German patent is not a T cell epitope, as indicated in the submitted excerpts showing that T cell epitopes must be of at least 8 amino acids in length. The T cell epitope of the present invention and the 7-30-mers of the present invention are not anticipated by the random disclosure of the 5-mer in the German patent. Nor is the present invention obvious over the German patent because the German patent does not disclose or suggest alone, or in combination with other references of record that the fiber will be suitable according to the present invention. Applicants believe that all claims as amended herein are allowable. Applicants believe that the claims 1-8, 17 and 18 define over the prior art of record and are in proper form for allowance. Applicants respectfully request allowance of claims 1-8, 17 and 18.

Respectfully submitted,

WEBB ZIESENHEIM BRUENING LOGSDON  
ORKIN & HANSON, P.C.

By

  
Barbara E. Johnson  
Registration No. 31,198  
Attorney for Applicants  
700 Koppers Building  
436 Seventh Avenue  
Pittsburgh, PA 15219-1818  
Telephone: 412-471-8815  
Facsimile: 412-471-4094

of 7 amino acids has been increased from 5 so as better to recite the small sequence which can be a T cell epitope otherwise known in the art at the time of filing of the present invention. With regard to this, Applicants hereby submit excerpts from two articles from 1989 and 1994 which indicate that known T cell epitopes range in length from 8-30 amino acids. The 70-mer peptide of the '710 patent does not anticipate the claimed peptides because it is much longer than the claimed peptides and it does not contain microbial T cell epitopes which correspond to mammalian homologues in the attached copy of Fig. 13, a series of at least 4 identical amino acids are shown by open bars and T cell epitopes are shown by closed bars. The stretch of 171-240 which corresponds to the 70-mer of the '710 patent does not have overlapping open and closed bars, i.e., overlapping areas of homology which correspond to T cell epitopes. Therefore the '710 patent does not anticipate the claimed invention, nor does it render obvious alone, or in combination with other references of record the peptides of the present invention.

The Examiner has rejected claim 8 under 35 U.S.C. §103(a) for purported obviousness over one of the Oftung article or the '710 patent in view of United States Patent No. 5,643,873. Applicants believe that the above-referenced amendments to claim 1 overcome this rejection for the same reasons as they overcome the asserted art rejections of claim 1.

As a final matter, Applicants have recently submitted German Patent DE 3 942 728. This reference was submitted in an Information Disclosure Statement on November 24, 1998. Applicants submit that the *Borrelia burgdorferi* partial amino

3. determine the total number of amino acids, including gaps, in any one of the sequences under consideration;

4. determine the number of identical amino acids placed below each other; and

5. divide the latter number (identical amino acids) by the former (total amino acids) and multiply by 100%.

Use of this algorithm is evidenced by the calculated percentages set forth in the specification and drawings of this application. Specifically, Figs. 13 and 14 show the sequence alignments and relative "sequence identity" percentages with no discussion of weighting of gaps, mismatches or the like, for any purpose (for instance, as is found in the FastDB algorithm). The alignment shown in Fig. 13 depicts the method described above and is in agreement with the calculated percentages set forth therein. In view of the above, Applicants respectfully request reconsideration of this rejection under 35 U.S.C. §112, second paragraph.

The Examiner has rejected claims 1-6 and 17-18 under 35 U.S.C. §102(b) for purported anticipation by the Oftung article. The Examiner alleges that the present claims do not distinguish over Oftung because the claims do not require a T cell response. Applicants hereby amend claim 1 to recite that the peptide is 7-30 amino acids in length. The upper limit of 30 amino acids defines a point beneath which the unexpected results in the present application are apparent. The lower limit